



“On the fly” collection development to support emergent energy research initiatives

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**Caltech
Library**



California Institute of Technology

AAU member

~2200 students, 285 faculty, 600 researchers

6 Divisions, ~25 Options

Biology & Biological Engineering

Chemistry & Chemical Engineering

Engineering & Applied Sciences

Geology & Planetary Sciences

Humanities and Social Sciences

Physics, Math and Astronomy



Sherman Fairchild Library

One of 4 libraries on campus

Opened in 1997, 24 hours

Serves all science & engineering disciplines

410,000 monographs (~7% electronic)

2,100 journals (90% electronic)



Energy & Sustainability Research at Caltech

- Harry Atwater
 - Howard Hughes Professor of Applied Physics & Materials Science
 - Nanophotonic materials
 - Low-cost and ultrahigh-efficiency thin-film photovoltaics
- Harry Gray
 - Arnold O. Beckman Professor of Chemistry
 - Electron-transfer chemistry
 - “The Solar Army” – combinatorial approach to new catalysts
- Sossina Haile
 - Carl F. Braun Professor of Materials Science and of Chemical Engineering
 - Solid state ionic materials and devices
 - New fuel cells based on solid acid electrolytes, improved solid oxide fuel cells

<http://www.caltech.edu/content/nanoscale-materials-and-big-solar-energy-interview-harry-atwater>

<http://www.thesolararmy.org>

<http://addis.caltech.edu>



Joint Center for Artificial Photosynthesis (JCAP)

- Established in 2010 as a DOE Energy Innovation Hub
 - Led by Caltech & LBNL, \$122M over 5 years
- Mission: “develop a manufacturable solar-fuels generator, made of Earth-abundant elements, that will use only sunlight, water, and carbon dioxide as inputs and robustly produce fuel from the sun ten times more efficiently than current crops.”
- Eight research areas, including:
 - Light Capture and Conversion (Chem, APh, MS)
 - Membrane and Mesoscale Assembly (APh)
 - Scale-Up and Prototyping (Aero, Env. Sci.)
- INOR-465, CATL-84, ENFL-145

<http://solarfuelshub.org>



Resnick Sustainability Institute (RSI)

- Founded in 2009 with grants from Resnick Family & Moore Foundation, under direction of Harry Atwater
- Fuel production, energy storage, distribution & efficiency, green technology
- Chemistry – environmentally-friendly catalysts for synthesis
- Bioengineering – Novel enzymes via directed evolution
- Materials Science – ultra-light materials, nanopatterning



<http://resnick.caltech.edu>



Library Support Strategy: Subject Specialization

- NOT a comprehensive collection – focus on current research & teaching
 - Understand and follow research from faculty (rather than Division/Option) perspective
- Existing collection a good basis
- Good communication between librarians!
- *Challenges with a new area:*
 - Rapid scale-up of both depth & breadth
 - Increase in number of people (and thus requests)
 - Communication of available resources



Databases & Collections

Leverage Existing Resources

- Increasing number of monographs, but field is new so journals/databases are main resource
- Subscription
 - Material properties: SciFinder, Reaxys, DIPPR
 - Bibliographic: Web of Science, SciFinder
- Open Access
 - ChemSpider – 28M substances
 - The Materials Project – 49K materials, battery applications
 - Energy Technology Data Exchange (EDTE Web) – energy sources and their environmental/climatic impact



Current Awareness New Resources

Suggest a book for purchase

Your Name (required):

Your E-Mail Address (required):

Please use your Caltech email address.

LECTURES

The Resnick Sustainability Institute presents the Chen-Huang Sustainable Energy Series and the Resnick Institute Public Lecture Series. Both series bring leading thinkers and researchers in energy science, technology, policy, economics, and media to campus to share their views with the Caltech community and the public. The Chen-Huang Sustainable Energy Series has a unique conversational format, where guests engage in discussion moderated by Caltech's Professor Nate Lewis. This series is made possible by the generous support of Dr. Marina Chen (MS '80 CS; PhD '83 CS) and Chi-Fu Huang.

PAST CHEN-HUANG SUSTAINABLE ENERGY SERIES LECTURES



March 14, 2013

8:00 pm - Ramo Auditorium

A Discussion with Steve Koonin - Part 1

A Discussion with Steve Koonin - Part 2

Dr. Steve Koonin, Director of the Center for Urban Science and Progress (CUSP) engages in conversation with Caltech's own Professor Nate Lewis. Discussion is followed by Q&A from the audience.



<http://library.caltech.edu>

<http://www.gobi3.com>

<http://www.ala.org/acrl/choice/home>

<http://cen.acs.org/departments/books.html>

<http://resnick.caltech.edu/lectures.php>



Current Awareness: Citation Analysis

- Librarians check faculty citations in Web of Science weekly and add information to Caltech CODA (Collection of Online Digital Archives)
 - Report errors to Web of Science
- CODA lists used by faculty and campus groups on websites
- Analyze:
 - Publication venues
 - Sources cited

CaltechAUTHORS
A Caltech Library Service

Caltech coda

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Items where Research Group Name is "Resnick Sustainability Institute"

Up a level

Export as: ASCII Citation Export

Atom RSS 1.0 RSS 2.0

Group by: Date Item Type Authors No Grouping

Jump to: 2014 | 2013 | 2012 | 2011

Number of items: 46.

2014

Abrecht, David G. et al. (2014) *Spin-State Effects on the Thermal Dihydrogen Release from Solid-State [MH(η^2 -H₂)dppf-2]⁺ (M = Fe, Ru, Os) Organometallic Complexes for Hydrogen Storage Applications*. Journal of Physical Chemistry C, 118 (4). pp. 1783-1792. ISSN 1932-7447. <http://resolver.caltech.edu/CaltechAUTHORS:20140129-130314711>

Liu, Yiyang et al. (2014) *Palladium-Catalyzed Decarbonylative Dehydration of Fatty Acids for the Production of Linear Alpha Olefins*. Advanced Synthesis and Catalysis, 356 (1). pp. 130-136. ISSN 1615-4150. <http://resolver.caltech.edu/CaltechAUTHORS:20140122-135551444>

2013

Webb, Michael A. and Miller, Thomas F., III (2013) *Position-Specific and Clumped Stable Isotope Studies: Comparison of the Urey and Path-Integral Approaches for Carbon Dioxide, Nitrous Oxide, Methane, and Propane*. Journal of Physical Chemistry A, 117 (10). pp. 2500-2510. ISSN 1089-5639. <http://resolver.caltech.edu/CaltechAUTHORS:20140113-090540183>

Herbert, David E. et al. (2013) *Heterometallic Triiron-Oxo/Hydroxo Clusters: Effect of Redox-Inactive Metals*. Journal of the American Chemical Society, 135 (51). pp. 10075-10085. ISSN 0002-7066. <http://resolver.caltech.edu/CaltechAUTHORS:20140113-090540183>



Current Awareness: Citation Analysis - Challenges

- Comprehensive coverage: searching different databases yields different results due to the nature of publications indexed by each and indexing terms used
- Resnick – 46 citations (provided by RSI), only 30 in WoS
 - Of 30 citations, 22 different venues, 19 currently subscribed
- JCAP-related citations:
 - 77 listed on website, not all are Caltech-specific
 - CODA listing would not be comprehensive – would only include work with Caltech-affiliated authors
 - ***i.e. some databases find JCAP in title/abstract, others in author affiliation or address***



Outreach

- Our relationship is with the faculty – we support whatever research they are conducting
 - We make connections and gain information as unobtrusively as possible
- Event attendance, personal connections
- Providing citation lists
- Letting the community know about our resources...



Discoverability

- Catalog – new materials list
- OpenURL resolver in Google Scholar
- Homepage – News
- LibGuides
- Email announcements



Future Considerations

- Funding expiration
- Flexibility in terms of collection

Acknowledgements

- Caltech Library